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Approved for use through 09/30/00. OMB0651-0032

UTILITY PATENT APPLICATION TRANSMITTAL

(For new Non-provisional applications under 37 CFR1.53(b))

Attorney Docket No.: VAL0829P0012US
First Named Inventor: Olivier de Pous et al.
Express Mail Label No. EL048605805US

Box PATENT APPLICATION
Assistant Commissioner For Patents
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is a new utility patent application of inventor(s): Olivier de Pous and Yannic Hermouet and entitled: A DEVICE AND A METHOD FOR ATTACHING A DISPENSER MEMBER TO A RECEPTACLE.

Application Elements:

1. [X] Specification containing 29 pages (preferred arrangement set forth below)
   -- Descriptive Title of the Invention
   -- Background of the Invention
   -- Summary of the Invention
   -- Brief Description of the Drawings
   -- Detailed Description
   -- Claim
   -- Abstract (of the Disclosure)

2. [X] Drawings: 11 Sheets of [X] formal drawings [ ] informal drawings

3. Oath or Declaration
   a. [ ] An executed declaration or oath for the utility patent application including a power of attorney,
   b. [X] A copy from a prior application (37 CFR 1.63(d), for continuing application with No. 16 completed).
      i. [ ] Signed statement attached deleting inventor(s) named in the prior application (see 37 CFR 1.63(d)(2) and 1.33(b).

4. [X] Incorporation by Reference (useable if Box 3b is checked) - The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 3b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

5. [ ] Microfiche Computer Program (Appendix)

6. [ ] Nucleotide and/or Amino Acid Sequence submission. including:
   [ ] Computer readable copy,
   [ ] Paper copy (identical to computer copy),
   [ ] Statement verifying identity of above copies.

Accompanying Application Parts:

7. [ ] Assignment Papers (cover sheet, document(s), and requisite fee ($40.00 for each property of each conveyance or transfer)).

8. [ ] 37 CFR 3.73(b) Statement (where there is an assignee)
   [ ] Power of Attorney

9. [ ] English Translation document (if applicable)

10. [X] Information Disclosure Statement (IDS), including PTO-1449
    [ ] Copies of IDS Citations

11. [X] Preliminary Amendment

12. [X] Return Postcard for PTO Mail Room Date Stamp (should be specifically itemized).

13. [ ] Small Entity Statement(s)
    [ ] Statement filed in prior application, status still proper and desired.

14. [ ] Certified Copy of Priority Document(s) (if foreign priority os claimed).

15. [ ] Other _____

16. [X] **If Continuing Application**, check appropriate box and supply the requisite information:
    [ ] Continuation [X] Divisional [ ] Continuation-in-part (CIP) of prior application No. 08/725,934 .

FEE CALCULATION

The fee has been calculated as shown below:

				Small Entity			Large Entity	
FOR	No. Filed	No. Allowed	No. Extra	Rate	Fee	OR	Rate	Fee
Basic Fee					$395.00	OR		$790.00
Total Claims	1	- 20 =	0	x $11.00	$	OR	x $22.00	$-
Independent Claims	1	- 3 =	0	x $41.00	$	OR	x $82.00	$-
Multiple Dep. Claims				+ $135.00	$	OR	+ $$270.00	$-
Other Fees				$	$	OR	$	$-
				TOTAL	$	OR	TOTAL	$790.00

17. [X] A check in the amount of $790.00 to cover the filing fee is enclosed.

18. [ ] Please charge my Deposit Account No. 04-1644 in the amount of $_____.

19. [X] The Commissioner is authorized to charge payment of the following amounts associated with this communication or credit any overpayment to Deposit Account No. 04-1644:
    a. [X] Additional filing fees under 37 CFR 1.16 or deficiencies in remittances therefor.
    b. [X] Additional processing fees under 37 CFR 1.17 or deficiencies in remittances therefor.
    c. [X] **ONLY if applicant has partially paid** the patent issue fee under 37 C.F.R. §1.18, then the **deficiency** shall be charged to Deposit Account No. 04-1644, and the Commissioner if authorized to so charge the Deposit Account.

Date: June 18, 1998

Attorney's Signature

Paul. M. Odell, Reg. No. 28,332

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CERTIFICATE OF EXPRESS MAIL

I hereby certify that this Utility Patent Application Transmittal, enclosed application, and any other documents referred to as enclosed herein, are being deposited in an envelope with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated below and addressed to Box PATENT APPLICATION, Assistant Commissioner for Patents, Washington, D.C. 20231.

EL048605805US
Express Mail Label No.

June 18, 1998
Date of Deposit

Paul M. Odell
Typed or Printed Name of Person Mailing Correspondence

Signature of Person Mailing Correspondence

"EXPRESS MAIL" Mailing Label No. EL048605805US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Olivier de Pous et al.	)	PATENT APPLICATION
Serial No.: Not Yet Designated (Divisional of Serial No. 08/725,934, filed October 7, 1996)	)	
Filed: Concurrently Herewith	)	Group Art Unit: Not Yet Designated
For: A DEVICE AND A METHOD FOR ATTACHING A DISPENSER MEMBER TO A RECEPTACLE	)	
Examiner: Not Yet Designated	)	

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

In accordance with Rule 115 of the Rules Of Practice, applicants hereby amend their above-identified application before the first examination and action as follows.

An attached Transmittal Letter presents a fee calculation and authorizes a charge to a Deposit Account if required.

IN THE TITLE

Please amend the title to read --METHOD FOR ATTACHING A DISPENSER MEMBER TO A RECEPTACLE--.

IN THE SPECIFICATION

Please amend the specification as follows:

On page 1, after line 2 (after the title), insert:

--This is a divisional of U.S. patent application Serial No. 08/725,934, filed October 7, 1996, which is a divisional of U.S. patent application Serial No. 08/311,041, filed September 22, 1994, now U.S. Patent No. 5,562,219, issued October 8, 1996--.

On page 15, in line 33, after "5" insert --of the--.

On page 17, in line 17, change "7" to --6--.

On page 18, in line 18, change "9" to --10--.

On page 18, in line 25, change "10" to --9--.

On page 19, in line 22, change "loop" to --hoop--.

On page 19, in line 30, after "the" insert --receptacle--.

IN THE CLAIMS

Please cancel claim 1-26 without prejudice before calculating the filing fee.

Please add new claim 27 as follows:

--27. A method of assembling a substance dispenser member on a receptacle having a flange around an opening, said method comprising the steps of:

(A) establishing a snap-fit engagement between said dispenser member and a top portion of an annular fixing ring that also has a bottom portion with an inwardly extending snap-fastening projection which is adapted to engage said receptacle flange;

(B) moving an annular hoop to a first position partway on said fixing ring where said hoop is spaced from said snap-fastening projection and establishes a friction-fit engagement between said fixing ring top portion and said hoop to create an assembly of said hoop, fixing ring, and dispenser member, said hoop and fixing ring top portion having interfering configurations preventing movement of said hoop beyond said first position when said hoop is subject to any axial thrust force less than a predetermined axial thrust force; and

(C) placing said assembly on said receptacle flange so that said dispenser member projects into said opening, said placing step including subjecting said hoop to a first axial thrust force less than said predetermined axial thrust force to move said hoop and fixing ring together toward said receptacle and cause said snap-fastening projection to temporarily deflect resiliently outwardly over said receptacle flange and then move inwardly to a snap-fastening engagement with said flange, said placing step including subsequently subjecting said hoop to a second axial thrust force at least as great as said predetermined axial thrust force for moving said hoop along said fixing ring while said hoop deforms said fixing ring top portion inwardly along at least part of the axial length of said top portion above said snap-fastening projection until at least part of said hoop is disposed adjacent said snap-fastening projection to prevent outward movement thereof.--

REMARKS

Examination of this application in light of the foregoing amendments and accompanying remarks is respectfully requested.

THE SPECIFICATION AMENDMENTS

The specification of this divisional application as filed is identical with the specification of the parent applications Serial Nos. 08/311,041 and 08/725,934 as filed. This divisional application has been filed with formal drawings identical with those formal drawings filed in the issued grandparent application Serial No. 08/311,041 and allowed parent application Serial No. 08/725,934.

The specification has been amended in this Preliminary Amendment. The specification amendments are identical with the amendments made during the prosecution of the prior applications 08/311,041 and/or 08/725,934. The amendments include minor typographical corrections. The words "of the" have been added in line 33 on page 15 because they were obviously inadvertently, initially omitted from the grandparent application as filed and because they are required for grammatical correctness. Similarly, the word "receptacle" has been added in line 30 on page 19 because it had been obviously inadvertently, initially omitted during preparation of the grandparent application.

These specification amendments do not constitute new matter because the specification amendments merely correct

obvious typographical errors or language errors and because the amendments are clearly supported by other portions of the specification and by the drawings as originally filed in the prior parent application and this application.

THE CLAIM AMENDMENTS

New method claim 27 has been added by this Preliminary Amendment. Claim 27 is identical with the claim 63 that had been added by Preliminary Amendment to the parent application Serial No. 08/725,934, and claim 63 was subsequently cancelled from the parent application by the Examiner for being directed to a non-elected invention.

Claims 1-26 have been cancelled by this Preliminary Amendment.

Entry of this Preliminary Amendment is respectfully requested.

Respectfully submitted,

ROCKEY, MILNAMOW & KATZ, LTD.

By _____
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Two Prudential Plaza, Suite 4700
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June 18, 1998

A DEVICE AND A METHOD FOR ATTACHING A DISPENSER MEMBER TO A RECEPTACLE

The present invention relates to a device for attaching, and to a method for attaching, a dispenser member, such as a pump or a valve, to the neck of a receptacle containing a substance to be dispensed.

BACKGROUND OF THE INVENTION

It is known that a dispenser or dispenser member can be attached or fixed to the neck of a receptacle by means of a collar or ring in a way that does not require crimping and thus facilitates assembly of the device.

In known techniques (e.g., U.S.A. Patent No. 2,723,773 issued to E. Greene in 1955), a fixing ring or attaching ring of the "snap-fastening" type is placed on the body of a dispenser member and is snap-fastened to the neck of the receptacle, generally by means of snap-fastening tabs provided for that purpose. A cup, hoop, or band is then engaged around the collar or ring to hold the collar or ring securely to the neck of the receptacle.

In order to have an inexpensive and simple assembly, it is typically necessary to effect both the snap-fastening of the ring and the engagement of the hoop mechanically by means of a single, automatic assembly machine. The assembly machine exerts sufficient force on the hoop so that the ring is first snap-fastened on the neck of the receptacle and so that the hoop is also subsequently fully engaged around the ring.

Conventional attachment devices suffer from certain drawbacks. In particular, when the force exerted on the hoop is not uniformly distributed around its periphery, there is a risk of the hoop being forced away from its vertical position in the assembly machine

so that the hoop becomes cocked or slanted and engaged obliquely on the fixing ring, thereby preventing proper overall assembly.

SUMMARY OF THE INVENTION

An object of the present invention is to avoid that drawback by providing an attaching ring or fixing ring that ensures effective and reliable engagement with the hoop.

The present invention provides an attaching ring or a fixing ring for attaching or fixing a dispenser member on a neck of a receptacle containing a substance to be dispensed. The fixing ring is annular and comprises a bottom portion and a top portion. The bottom portion includes attaching means or fixing means for fixing the ring to the neck. The top portion includes an opening for the dispenser member as well as means for securing the dispenser member on the container neck.

The top portion further includes at least one guide wall element extending vertically parallel to the longitudinal axis of the dispenser member and around the periphery of the fixing ring substantially in line with the fixing means of the bottom portion. This guide wall element guides the hoop during installation and facilitates proper engagement of the components.

In a preferred embodiment of the ring, the fixing means are snap-fastening means. Most preferably, the snap-fastening means are in the form of tabs.

In the preferred embodiment of the ring, the guide wall elements form a continuous, guiding, annular crown.

The fixing ring is adapted to be threaded around, or otherwise mounted to, the head of a dispenser member. A fixing ring made in accordance with the invention also has the advantage of accommodating

partial installation of a cup or hoop partway on the fixing ring which has been mounted to the dispenser member. The hoop can be disposed on the ring around the guide wall elements prior to being delivered to the customer. The customer then merely has to fill the receptacle with the chosen substance and place the subassembly or unit formed by the dispenser member, the fixing ring, and the hoop in the assembly machine. The assembly machine mounts the pre-assembled subassembly or unit on the receptacle to engage the fixing means with the receptacle neck and subsequently pushes the hoop down relative to the ring to effect final assembly of the hoop in a fully engaged position around the ring.

The guide wall elements effectively eliminate, or at least minimize, the likelihood of separation of the hoop from the fixing ring during delivery to the customer (e.g., when separation forces are imposed on the components due to vibration in transport). The guide wall elements also ensure that the hoop is correctly positioned for initial engagement by the assembly machine and for accommodating subsequent full engagement with the ring in the final assembly configuration.

Preferably, the guide wall elements have an outside diameter that is approximately equal to the inside diameter of the hoop, thereby enabling the hoop to be slidably engaged with the ring so that the frictional engagement prevents easy separation.

Another aspect of the invention provides a multi-component attaching device or fixing device for fixing a dispenser member to the neck of a receptacle containing a substance to be dispensed. In the preferred form, the multi-component device includes two components. The device includes an annular fixing ring provided with snap-fastening means designed to snap-

fasten to the neck of the receptacle. The device also includes an annular hoop with an inside diameter substantially equal to the outside diameter of the fixing ring and which is adapted to be mounted on the fixing ring in a force fit (i.e., by means of a force fit, such as a press fit) to prevent the snap-fastening means from splaying apart.

The ring of the multi-component device comprises a bottom portion and a top portion. The bottom portion includes the snap-fastening means for snap-fastening to the receptacle neck. The top portion includes an opening for the dispenser member and means for holding the dispenser member securely to the neck. The top portion further includes at least one guide wall element extending vertically parallel to the longitudinal axis of the dispenser member around the periphery of the fixing ring and substantially in line with the snap-fastening means of the bottom portion.

To obtain effective assembly of the fixing ring and of the hoop with a single assembly machine, it is essential for the ring to be completely snap-fastened on the neck of the receptacle before the hoop is fully engaged with the ring in the final position.

Generally, this problem is solved by providing an initial friction fit between the ring and the hoop in an initial, non-final position wherein the force of the initial frictional engagement is greater than the force required to initially snap-fasten the ring on the neck of the receptacle.

By exerting enough force on the hoop, it is thus possible to first snap-fasten the ring on the neck of the receptacle, and subsequently move the hoop from its initial position completely down over the ring to a final position. However, as conventionally effected, this technique suffers from the drawback that the

relative dimensions of the ring and of the hoop must be accurately defined so that the friction force between them is always the same.

Unfortunately, for manufacturing reasons, those dimensions are likely to vary somewhat, and as a result, proper assembly is not guaranteed. It is essential for the ring to snap-fasten before the hoop is positioned around snap-fastening means thereon, and that may not occur if the resistance to snap-fastening is too great or if the friction between the ring and the hoop is too small.

In a system described in German patent application No. P43 38 791.8, one or more outwardly projecting pins are provided on the outside circumference of the snap-fastening ring. The bottom of the hoop initially bears against them. When a downward force is applied to the hoop, the hoop and ring move down together in this pre-assembly configuration. The ring, while being driven downwardly by the hoop engaging the ring pins, is caused to snap-fasten onto the receptacle before the pins are broken or inwardly deformed by the effect of a subsequent greater installation force which allows the hoop to be moved down on the ring and fully engaged around the ring. That solves the problem of tolerance of the dimensions. However, such special rings can be difficult to mold, and that increases the cost of the device.

An object of one form of the present invention is to avoid the above-identified drawbacks by providing a snap-fastening ring and a hoop that are easy to mold, that can be assembled by a single assembly machine, and that facilitate effective assembly independently of dimensional tolerances, thereby making it possible significantly to reduce the manufacturing costs of a dispenser.

One form of the present invention therefore provides a further improved, multi-component fixing device for attaching or fixing a dispenser member to the neck of a container or other receptacle containing a substance to be dispensed. The device includes an annular fixing ring provided with snap-fastening means designed to snap-fasten to the neck of the receptacle.

The device also includes an annular hoop which has an inside diameter that is substantially equal to the outside diameter of the fixing ring. The hoop is adapted to be engaged in a force fit (i.e., by means of a force fit, such as a press fit) on the fixing ring to prevent the snap-fastening means from splaying apart.

The fixing ring comprises a bottom portion and a top portion. The bottom portion includes the snap-fastening means for engaging the neck. The top portion includes an opening for the dispenser member and means for holding it securely to the neck. The top portion further includes at least one guide wall element extending vertically parallel to the longitudinal axis of the dispenser member around the periphery of the fixing ring substantially in line with the snap-fastening means of the bottom portion.

The hoop has an annular side wall. The hoop includes at least one projection on the inside face of its side wall which extends vertically over at least a fraction of the height of the side wall. The inside diameter of the hoop at the projection is slightly less than the outside diameter of the fixing ring. Preferably, the projection is in the form of a rib. In one embodiment, the rib can be defined by the convex side of an indentation formed in the side wall.

For delivery purposes, the hoop can initially be pre-engaged partway on the ring--on the guide wall of the fixing ring--with the bottom end of the projection

abutting the top end of the guide wall. During final assembly, the projection pushes against the guide wall of the ring, and the ring and the hoop are initially moved together to snap-fasten the ring on the neck of the receptacle before the hoop is subsequently moved down relative to the ring and positioned around the snap-fastening elements of the ring.

Preferably, the hoop includes a plurality of projections uniformly distributed around the inside face of the side wall of the hoop.

In a preferred form, the projection extends vertically from the top end of the hoop to a point situated more than halfway down the height of the hoop.

Optionally, the projection may have the form of an annular shoulder extending horizontally around the entire circumference of the hoop.

Preferably, the hoop is made of a material that is harder than that of the fixing ring. In a preferred form, the hoop is made of metal, and the fixing ring is made of a plastic material.

In another embodiment, the invention includes a particular type of a projection on the hoop of a multi-component fixing device for attaching or fixing a dispenser member to the neck of a receptacle containing a substance to be dispensed. The fixing device includes an annular fixing ring provided with snap-fastening means designed to snap-fasten to the neck of the receptacle.

The fixing device also includes an annular hoop which has an inside diameter that is substantially equal to the outside diameter of the fixing ring. The hoop is adapted to be engaged in a force fit with the fixing ring to prevent the snap-fastening means from splaying apart.

The fixing ring comprises a bottom portion and a top portion. The bottom portion includes the snap-fastening means for snap-fastening to the neck. The top portion includes an opening for the dispenser member and means for holding it securely to the neck. The top portion further includes at least one guide wall element extending vertically parallel to the longitudinal axis of the dispenser member around the periphery of the fixing ring substantially in line with the snap-fastening means of the bottom portion.

The hoop includes at least one projection on the inside face of its side wall. The projection extends obliquely over at least a fraction of the height of the side wall. The inside diameter of the hoop at the projection is slightly less than the outside diameter of the fixing ring.

Preferably, the projection is a rib. The rib may be defined by the convex side of an indentation formed in the hoop side wall.

The use of the obliquely oriented projection advantageously facilitates separation of the hoop (which is typically made of metal) from the fixing ring (which is typically made of a plastic material) by unscrewing the hoop. This is of particular advantage for selective recycling of the different component materials from which the dispenser is made.

The present invention also provides a method of attaching or fixing a dispenser member to the neck of a container or other receptacle containing a substance to be dispensed. The method comprises the following steps:

(1) placing an annular attaching ring or fixing ring on the dispenser member, the annular fixing ring being provided at one end with snap-fastening means and its opposite end with a guide wall extending in line

with the snap-fastening means parallel to the longitudinal axis of the fixing ring;

(2) pre-engaging or partly engaging an annular hoop at an initial or first position on the guide wall of the fixing ring, the inside diameter of the hoop being substantially equal to the outside diameter of the fixing ring;

(3) placing a subassembly of the dispenser member, the fixing ring, and the hoop on the neck of the receptacle;

(4) exerting a first force F1 on the hoop which bears against the guide wall of the fixing ring and urges the fixing ring into further engagement with the neck of the receptacle, the snap-fastening means first splaying apart under the effect of the force F1 and subsequently snap-fastening to the neck of the receptacle as the ring moves with the hoop relative to the receptacle; and

(5) exerting on the hoop a second force F2 that is greater than the first force F1, the second force F2 being sufficient to cause the hoop to move relative to the fixing ring at a final position to further engage the fixing ring in a force fit with a portion of the hoop being located adjacent the snap-fastening means, the hoop thus preventing the snap-fastening means of the fixing ring from splaying apart.

The present invention also provides another form of a method of attaching or fixing a dispenser member to the neck of a container or other receptacle having a flange and containing a substance to be dispensed. The method comprises the following steps:

(1) placing an annular attaching ring or fixing ring on the dispenser member, the fixing ring being provided at one end with snap-fastening means and at its opposite end with a guide wall extending in line

with the snap-fastening means parallel to the longitudinal axis of the fixing ring;

(2) pre-engaging or partly engaging an annular hoop at an initial or first position on the guide wall of the fixing ring, the inside diameter of the hoop being substantially equal to the outside diameter of the fixing ring and the hoop being provided on the inside face of its side wall with at least one projection extending along at least a fraction of the height of the side wall, the inside diameter of the hoop at the projection being slightly less than the outside diameter of the fixing ring, the hoop being partly engaged or pre-engaged on the guide wall in the position where the bottom end of the projection of the hoop bears against the top end of the guide wall of the fixing ring;

(3) placing a subassembly of the dispenser member, the fixing ring, and the hoop on the neck of the receptacle;

(4) exerting a first force F1 on the hoop which bears against the guide wall of the fixing ring via the bottom end of the projection and which pushes the fixing ring against the neck of the receptacle, the snap-fastening means first splaying part under the effect of the force F1 prior to snap-fastening to the flange of the neck of the receptacle; and

(5) exerting on the hoop a second force F2 greater than the first force F1, the second force F2 being sufficient to cause the hoop to move relative to the fixing ring to a final position so as to further engage the fixing ring in a force fit with a portion of the hoop being located adjacent the snap-fastening means, the hoop thereby preventing the snap-fastening means of the fixing ring from splaying apart.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of the present invention appear from the following description of various embodiments which are presented by way of non-limiting examples and with reference to the accompanying drawings.

In the drawings:

FIG. 1 is a partially sectioned elevational view of an embodiment of a fixing ring of the invention;

FIG. 2 is a partially sectioned elevational view of another embodiment of a fixing ring of the invention;

FIG. 3 is a cross-sectional view of a multi-component fixing device of the invention that includes the ring of FIG. 1 and a first form of a hoop, the device being shown with its ring in a snap-fastened position on a container flange prior to the hoop being moved further down relative to the ring to effect a final, full engagement between the hoop and ring;

FIG. 4a is a cross-sectional view of a fixing device of the invention including the ring of FIG. 1 and a second form of the hoop, the device being shown in a position on a dispenser member forming a subassembly that is suitable for delivery to a customer and in which the hoop is pre-engaged with, or mounted partway on, the ring which is mounted to the dispenser member;

FIG. 4b is a cross-sectional view of the device of FIG. 4a after the ring has been snap-fastened onto the neck of a receptacle and prior to establishing the final, full engagement or complete engagement between the hoop and the ring;

FIG. 4c is cross-sectional a view of the device of FIG. 4b in the final assembly position after the hoop has been fully engaged with the ring;

FIG. 5 is a cross-sectional view of a third form of the hoop, and this form could also be employed in the device shown in FIGS. 4a-4c;

FIG. 6 is a view similar to FIG. 5, but FIG. 6 shows a fourth form of the hoop;

FIG. 7 is a view similar to FIG. 5, but FIG. 7 shows a fifth form of the hoop;

FIG. 8a is a cross-sectional view of a fixing device of the invention incorporating the ring of FIG. 1 and a sixth form of the hoop, the device being shown in its position where the ring has been snap-fastened and where the hoop is mounted in an initial position partway on the ring, but prior to the final or complete engagement between the hoop and the ring;

FIG. 8b is a cross-sectional view of the device of FIG. 8a after the hoop has been moved further down relative to the ring to the final position where the hoop is fully engaged with the ring;

FIG. 9 is a cross-sectional view of the hoop employed in the embodiment of the device shown in FIGS. 8a and 8b;

FIG. 10 is a cross-sectional view similar to FIG. 9, but FIG. 10 shows a seventh form of the hoop; and

FIGS. 11 and 12 are greatly enlarged, fragmentary, cross-sectional views of the two forms of the hoop shown in FIGS. 4a and 5, respectively.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In one aspect of the invention, an annular attaching ring or fixing ring is provided to attach or fix a dispenser member on the neck of a container or other receptacle containing a substance to be dispensed. Two variants or embodiments of such a fixing ring 10 are shown in FIGS. 1 and 2.

With reference to FIG. 1, the fixing ring 10 includes a bottom portion designed to cooperate with the neck of the receptacle and includes a top portion designed to cooperate with the dispenser member. The bottom portion includes fixing means 12, 13 for holding, engaging, or attaching the ring 10 to the neck. The means 12, 13 may be snap-fastening means. Preferably, the snap-fastening means 12, 13 include snap-fastening tabs 12 and engaging members, catches, or feet 13. The tabs 12 are preferably distributed around the circumference of the ring 10 and extend parallel to the central axis of the ring 10 (downwardly in FIGS. 1 and 2).

Each of the tabs 12 preferably includes a snap-fastening catch 13 at its bottom end that projects from the inside surface of the ring 10. Each catch 13 and tab 12 can be moved together outwardly a little when sufficient downward force is applied to the ring 10 so as to enable it to pass over, and then snap in behind, the neck of the receptacle.

The bottom portion of the ring 10 is connected to the top portion via an annular shoulder or flat 11 that extends radially inwardly relative to the central axis of the ring and that is approximately perpendicular to the tabs 12. The flat 11 can rest directly on the top surface of the neck of the receptacle, or on a sealing gasket which may be provided at that location, or on a complementary surface of the dispenser member. The flat 11 functions to hold or secure the dispenser member on (i.e., at) the neck of the receptacle.

As shown in FIG. 1 for one embodiment of the ring 10, the flat 11 may be extended towards the inside of the ring by means of a turret 15 that enables it to be securely held to a portion of the dispenser member.

In the second embodiment shown in FIG. 2, such a turret is not provided.

Depending on the particular embodiment, it is either the flat 11 or the turret 15 that defines a central opening 16 through which the dispenser member extends.

In accordance with the invention, the top portion of the snap-fastening ring 10 also includes one or more guide wall portions 14 extending vertically upwardly parallel to the central axis of the ring and extending from the snap-fastening tabs 12. Advantageously, the guide wall elements can form a continuous annular guide crown 14. The guide wall element(s) 14 function to hold a cup or hoop (e.g., hoop 20 in FIG. 3) in proper alignment when such a hoop is mounted on, and slid down around, the ring 10 as described in detail hereinafter.

In another aspect of the present invention, a multi-component device is provided for fixing a dispenser member on the neck of a receptacle containing substances to be dispensed. The device includes a fixing ring 10 as described above together with a hoop 20 (e.g., as shown in FIG. 3) that can be engaged around the tabs 12 of the ring 11 to prevent the tabs 12 from splaying apart. This secures the ring 10 firmly on the neck of the receptacle, and also secures the dispenser member thereon.

FIG. 3 illustrates a portion of a substance dispenser that includes a container or receptacle 1 having a neck or flange 2 and that includes a dispenser member 3. The member 3 has a body 4 which includes a top portion from which a dispenser head 5 extends.

The receptacle 1 is typically made of glass or of a plastic material, and its neck or flange 2 is cylindrical.

The dispenser member 3 is typically a pump or a valve, depending on the nature of the substance to be dispensed and which may be of any desired consistency.

In order to attach or fix the dispenser member 3 on (i.e., at) the neck 2 of the receptacle 1, an annular fixing ring 10, such as described above with reference to FIG. 1, can be employed. The ring 10 is placed over a top portion 6 of the body 4 of the dispenser member 3. Of course, it would also be possible to use the ring 10 as shown in FIG. 2 or any other similar ring.

The dispenser member 3 in FIG. 3 is held on the neck 2 by means of the shoulder or flat 11 and by means of the turret 15. The dispenser head 5 extends through the opening 16. Optionally, a sealing ring 7 can be provided between the top surface of the neck 2 and the bottom surface of the flat 11 of the fixing ring 10.

As described above, the fixing ring or snap-fastening ring 10 includes one or more guide wall elements 14 that may preferably be provided in the form of an annular guide crown 14.

The annular hoop 20 is designed to accommodate a forced engagement or force fit with the ring 10 for the purpose of preventing the snap-fastening tabs 12 from splaying apart. The hoop 20 has an annular side wall 21 with an inside surface 21a and an outside surface 21b. The hoop 20 can be initially mounted partway on the ring 10. In particular, a portion of the hoop 20 can be engaged with, or placed on, the annular crown 14. The hoop 20 includes an opening 23 at its top end to receive an actuator button or plug 30 that is mounted on the head 5 dispenser member 3.

Preferably, the outside diameter of the guide crown 14 (or plural guide wall elements, if employed) is

substantially identical with the inside diameter of the side wall of the hoop 20. As a result, the hoop 20 can slide in a friction fit over the guide crown 14 to a partially engaged or pre-assembled position on the ring 10 as shown in FIG. 3. In such an initial configuration, the subassembly of the dispenser member 3, ring 10, and hoop 20 can be supplied to an assembly machine for final assembly (i.e., installation) on the receptacle 1.

The friction between the guide crown 14 and the hoop 20 prevents these two parts from separating during delivery to the customer who uses the assembly machine to effect final assembly on the receptacle 1. In addition, because the guide crown 14 extends substantially in line with the snap-fastening tabs 12, the hoop 20 will engage the circumference of snap-fastening tabs 12 in a straight relationship and will not become cocked on the tabs 12.

To achieve effective assembly and fixing of the dispenser member 3 on the neck 2 of the receptacle 1 using a single assembly machine, the hoop 20 must not begin to reach its fully lowered, final engagement position around the tabs 12 prior to the tabs 12 snap-fastening beneath the neck 2. (The fully engaged, final position of the hoop 20 for the embodiment of the exact device shown in FIG. 3 is not illustrated, but such a final position is analogous to the position shown for the hoop 20 in an alternate form of the device shown in FIG. 4c.)

The final engagement of the components can be facilitated by employing another aspect of the invention as shown in FIGS. 4a to 12. Specifically, the hoop 20 can be provided with at least one projection 22, 24 (projection 22 in FIGS. 4a, 4b, 4c, 5-7, 11, and 12; and projection 24 in FIGS. 8a, 8b, 9, and 10). The

projection is on the inside face 21a of the annular side wall 21 of the hoop 20. The projection occupies a fraction of the height of the side wall 21. The inside diameter of the hoop 20 over the projection 22 or 24 is slightly less than the outside diameter of the ring 10.

As shown for an embodiment in FIGS. 11 and 12, the projection 22 may have the form of a rib. The projection 22 may be a solid rib (e.g., as shown in FIG. 11 for projection 22) or may be a rib defined by the convex side of an indentation formed in the side wall (e.g., as shown in FIG. 12 for projection 22). When solid ribs are used (FIG. 11), the outside surface 21b of the hoop 20 remains perfectly cylindrical, and this may constitute an advantage from the point of view of appearance.

In the embodiments of the hoop as shown in FIGS. 4a-7, 11, and 12, the projections 22 extend vertically up the side wall 21. Preferably, the hoop 20 includes a plurality of such projections 22 that are regularly distributed around the inside face 21a of the side wall 21, as in the embodiments illustrated in FIGS. 4a, 4b, 4c, 5, 6, 11, and 12. Preferably, as shown in FIGS. 4a and 5, the projections 22 extend from the top end of the hoop 20 to at least halfway down the hoop 20. Preferably, when a plurality of projections is provided, all of the projections are identical.

In another embodiment, shown in FIG. 7, the projection 22 is an annular shoulder extending horizontally around the entire inner circumference of the hoop 20.

In the embodiments of the hoop shown in FIGS. 8a to 10, the projections 24 are slanted and extend obliquely along the side wall 21. Preferably, the oblique projection 24 is elongate in shape so as to form

an internal thread on the annular side wall 21 of the hoop 20.

The oblique forms of the projections are particularly advantageous when the ring 10 is made of a plastic material while the hoop 20 is made of metal. After some length of time that depends on the hardness of the plastic material constituting the ring 10, the ring material cold flows or creeps to match or conform to the shape of the projection 24 of the hoop 20.

Subsequently, the oblique projection(s) 24, which form a partial or complete inside thread on the side wall 21 of the hoop 20, permit the hoop 20 to be removed from the ring 10 merely by unscrewing the hoop 20 from the ring 10 once the dispenser is no longer in use. It is therefore possible to separate components made of plastic materials from components made of metal for the purpose of performing selective recycling.

In a variant shown in FIG. 9, the inside face of the side wall 21 of the hoop 20 includes only one projection 24. Advantageously, that one oblique projection 24 occupies about one full turn of the circumference of the side wall 21. It is clear that under such circumstances, the slope of the projection 24 is relatively shallow.

In another variant shown in FIG. 10, the inside face of the annular side wall of the hoop is provided with a plurality of parallel, oblique projections 24 which are preferably uniformly distributed around the inner circumference of the side wall.

The method or operation of attaching or fixing the device is next briefly described with reference to FIGS. 4a to 4c which illustrate the form of the hoop 20 that has vertical projections 22. However, it will be appreciated that the device operates in identical manner

with a hoop having one or more oblique projections (such as in the hoops 20 illustrated in FIGS. 8a, 8b, 9, and 10).

First, the fixing ring 10 is threaded around, or otherwise disposed on, the head 5 of the dispenser member 3. The ring 10 is fixed or retained on the head 5 by means of the turret 15 engaging the top portion 6 of the body 4 of the dispenser member 3.

The hoop 20 is then mounted partway on the ring 10. In particular, the hoop 20 placed around the guide wall element(s) 14 that preferably form an annular crown on the fixing ring 10. The hoop is pushed down on the ring 10 until the bottom ends 22a of the projections 22 abut the top end of the annular crown 14 of the fixing ring 10. This forms a subassembly constituted by the dispenser member 3, the ring 10, and the hoop 20. FIG. 4a shows the subassembly in its pre-engaged, non-final configuration, and it is in this configuration that the assembly is delivered to the customer. The customer then needs merely to fill the receptacle 1 with the chosen substance and to install the subassembly (dispenser member 3, ring 10, and loop 20) on the receptacle 1 with a single assembly machine (not shown).

In those applications where a gasket 7 is employed, the gasket 7 is disposed around the top of the receptacle flange 2. The body 4 of the dispenser member 3 is then inserted into the neck of the receptacle 1 so that the snap-fastening tabs 12 initially rest against the sealing gasket 7 on the top surface of the neck 2 of the 1.

The assembly machine applies a first vertical thrust force F1 to the hoop 20. Because the inside diameter of the hoop 20 around its projections 22 is less than the outside diameter of the fixing ring 10, the hoop is initially prevented from sliding down

further over the ring when the force F1 is applied to the hoop 20. The force F1 is therefore transmitted by the hoop 20 to the fixing ring 10 so that the ring 10 and hoop 20 move down together on the top of the receptacle 1. The snap-fastening tabs 12 splay apart under the effect of the force F1, and the ring 10 slides down around the neck 2 of the receptacle 1 until the snap-fastening tabs 12 snap beneath the neck 2 (as can be seen in FIG. 4b). The body 4 of the dispenser member 3 is then securely held inside the receptacle 1. Sealing is provided by the sealing gasket 7.

The assembly machine continues to urge the hoop 20 downwardly. A second vertical thrust force F2 is applied to the hoop 20 by the machine. This second force F2 is greater than the first force F1 and is sufficient to force the hoop 20 further down onto the fixing ring 10 as the projections 22 temporarily deform the ring guide wall 14 to accommodate the further downward movement of the hoop 20 to the final position shown in FIG. 4c where the lower portion of the hoop is adjacent the tabs 12.

The snap-fastening tabs 12 of the fixing ring 10 are thus held in their locking position and they cannot splay apart, thus ensuring that the dispenser member 3 will remain fixed or attached to the receptacle 1.

The required difference between the forces F1 and F2 depends on the shape and size (e.g., radial thickness) of the projections 22 in the hoop 20 and also depends on the characteristics of the material of the ring 10. A sufficient radial thickness of the projections 22 makes it possible to ensure effective assembly even if the snap-fastening tabs 12 should, for manufacturing reasons, be somewhat less flexible than

intended, thereby causing them to exhibit higher resistance to snap-fastening.

When the hoop 20 is preferably made of metal, it is relatively easy to force it onto the fixing ring 10 (which is typically made of a plastic material) even though the inside diameter of the hoop 20 (as measured around its projections 22) is smaller than the outside diameter of the ring 10. The projections 22 become embedded in the annular guide crown 14 of the fixing ring 10.

In the presently preferred embodiment, the lowest parts of the ribs (e.g., the bottoms 22a of the ribs 22) are above the tab snap-fastening catches 13 when the hoop 20 is in the fully assembled, final, lowest position on the fixing ring 10.

When using a ring 10 which has no projections (e.g., as shown in FIG. 3), the initial frictional engagement between the ring 10 and hoop 20 is great enough to prevent movement of the hoop 20 all the way down into full engagement around the ring 10 until after the ring 10 has been pushed onto the receptacle flange 2 and snap-fastened thereto.

WHAT IS CLAIMED IS:

1. A fixing ring for fixing a dispenser member on a neck of a receptacle containing a substance to be dispensed, said fixing ring being annular and comprising a bottom portion and top portion, said bottom portion including fixing means for fixing said ring to said neck and said top portion including an opening for the dispenser member and means for securing said member on said neck, said top portion further including at least one guide wall element extending vertically parallel to the longitudinal axis of the dispenser member and around the periphery of said fixing ring substantially in line with said fixing means of said bottom portion.

2. A fixing ring according to claim 1 wherein said fixing means of said ring are snap-fastening means.

3. A fixing ring according to claim 2 wherein said snap-fastening means of said ring are snap-fastening tabs.

4. A fixing ring according to claim 1, wherein said guide wall element is a continuous, guiding, annular crown.

5. A fixing device for fixing a dispenser member to the neck of a receptacle containing a substance to be dispensed, said device comprising: an annular fixing ring provided with snap-fastening means designed to snap-fasten to said neck of the receptacle and an annular hoop which has an inside diameter that is substantially equal to the outside diameter of the fixing ring and that can be engaged in a force fit on said fixing ring to prevent said snap-fastening means from splaying apart, said fixing ring comprising a bottom portion and a top portion, said bottom portion including said snap-fastening means for snap-fastening to said neck, said top portion including an opening for

the dispenser member and means for holding it securely to said neck, said top portion further including at least one guide wall element extending vertically parallel to the longitudinal axis of the dispenser member around the periphery of said fixing ring and substantially in line with snap-fastening means of said bottom portion.

6. A fixing device according to claim 5 wherein said snap-fastening means of said ring are snap-fastening tabs.

7. A fixing device according to claim 5 wherein said guide wall element is a continuous, guiding annular crown.

8. A fixing device for fixing a dispenser member to the neck of a receptacle containing a substance to be disposed, said device comprising: an annular fixing ring provided with snap-fastening means designed to snap-fasten said ring to said neck of the receptacle and an annular hoop defining an annular side wall which has at least a portion with an inside diameter substantially equal to the outside diameter of the fixing ring and which can be engaged in a force fit on said fixing ring to prevent said snap-fastening means from splaying apart, said fixing ring comprising a bottom portion and a top portion, said bottom portion including said snap-fastening means for engaging said neck, said top portion including an opening for the dispenser member and means for holding it securely to said neck, said top portion further including at least one guide wall element extending vertically parallel to the longitudinal axis of the dispenser member around the periphery of said fixing ring substantially in line with said snap-fastening means of said bottom portion, said hoop including at least one projection that is located on the inside face of its side wall and that extends

vertically over at least a fraction of the height of said side wall, the inside diameter of said hoop at said at least one projection being slightly less than the outside diameter of said fixing ring.

9. A fixing device according to claim 8 wherein said snap-fastening means of said ring are snap-fastening tabs.

10. A fixing device according to claim 8 wherein said guide wall element is a continuous, guiding, annular crown.

11. A fixing device according to claim 8 wherein said at least one projection is a rib.

12. A fixing device according to claim 8 wherein said hoop has an annular side wall and wherein said at least one projection is formed by an indentation in said side wall.

13. A fixing device according to claim 8 wherein said hoop has an annular side wall and wherein said hoop includes a plurality of projections uniformly distributed around the inside face of said side wall.

14. A fixing device according to claim 8 wherein said projection is an annular shoulder extending horizontally around the inside circumference of said hoop.

15. A fixing device according to claim 8 wherein said hoop consists of a material that is harder than that of said fixing ring.

16. A fixing device according to claim 15 wherein said hoop consists of metal and said fixing ring consists of a plastic material.

17. A fixing device according to claim 8 wherein said at least one projection extends vertically from the top end of said hoop to a point situated more than halfway down the height of said hoop.

18. A fixing device for fixing a dispenser member to the neck of a receptacle containing a substance to be dispensed, the fixing device comprising: an annular fixing ring provided with snap-fastening means designed to snap-fasten said ring to said neck of the receptacle and an annular hoop having an annular side wall whose inside diameter is substantially equal to the outside diameter of said fixing ring and which can be engaged in a force fit on said fixing ring to prevent said snap-fastening means from splaying apart, said fixing ring comprising a bottom portion and a top portion, said bottom portion including said snap-fastening means for snap-fastening to said neck, said top portion including an opening for the dispenser member and means for holding it securely to said neck, said top portion further including at least one guide wall element extending vertically parallel to the longitudinal axis of the dispenser member around the periphery of said fixing ring substantially in line with said snap-fastening means of said bottom portion, said hoop including at least one projection on the inside face of its side wall, said projection extending obliquely over at least a fraction of the height of said side wall, the inside diameter of said hoop at said at least one projection being slightly less than the outside diameter of said fixing ring.

19. A fixing device according to claim 18 wherein said snap-fastening means of said ring are snap-fastening tabs.

20. A fixing device according to claim 18 wherein said guide wall element is a continuous, guiding, annular crown.

21. A fixing device according to claim 18 wherein the inside face of said annular side wall of said hoop is provided with a single oblique projection

extending substantially over a full turn of the circumference of said annular wall.

22. A fixing device according to claim 18 wherein the inside face of said annular side wall of said hoop is provided with a plurality of parallel oblique projections distributed around its circumference.

23. A fixing device according to claim 18 wherein said at least one projection has the form of a rib.

24. A fixing device according to claim 18 wherein said at least one projection is formed by an indentation in said hoop side wall.

25. A method of fixing a dispenser member to the neck of a receptacle containing a substance to be dispensed, the method comprising the following steps:

placing an annular fixing ring on said dispenser member, said annular fixing ring being provided at one end with snap-fastening means and at its opposite end with a guide wall extending in line with said snap-fastening means parallel to the longitudinal axis of said fixing ring;

pre-engaging an annular hoop on the guide wall of said fixing ring, the inside diameter of the hoop being substantially equal to the outside diameter of said fixing ring;

placing a subassembly comprising said dispenser member, said fixing ring, and said hoop on said neck of said receptacle;

exerting a first force F1 on the hoop which bears against the guide wall of said fixing ring and urges said fixing ring onto said neck of the receptacle, said snap-fastening means splaying apart under the effect of the force F1 prior to snap-fastening to said neck of the receptacle; and

exerting on said hoop a second force F2 that is greater than the first force F1, said second force F2 being sufficient to cause said hoop to be moved down said ring and engaged in a force fit on said fixing ring at a final position, said hoop thus preventing said snap-fastening means of the fixing ring from splaying apart.

26. A method of fixing a dispenser member to the enlarged flange on the neck of a receptacle containing a substance to be dispensed, the method comprising the following steps:

placing an annular fixing ring on said dispenser member, said fixing ring being provided at one end with snap-fastening means and at its opposite end with a guide wall extending in line with said snap-fastening means parallel to the longitudinal axis of said fixing ring;

pre-engaging an annular hoop at an initial position on the guide wall of said fixing ring, said hoop having an annular side wall with an inside diameter substantially equal to the outside diameter of said fixing ring, said hoop having on the inside face of its side wall at least one projection extending over at least a fraction of the height of said side wall, the inside diameter of the hoop at said at least one projection being slightly less than the outside diameter of said fixing ring, said hoop being pre-engaged on said guide wall in the position where the bottom end of said at least one projection of said hoop bears against the top end of said guide wall of said fixing ring;

placing a subassembly comprising said dispenser member, said fixing ring, and said hoop on said neck of said receptacle;

exerting a first force F1 on the hoop which bears against the guide wall of said fixing ring via

said bottom end of said at least one projection and which pushes said fixing ring against the neck of the receptacle, said snap-fastening means splaying apart under the effect of the force F1 prior to snap-fastening to the enlarged flange of said neck of the receptacle; and

exerting on said hoop a second force F2 greater than the first force F1, said second force F2 being sufficient to cause said hoop to be moved down said ring and engaged in a force fit on said fixing ring at a final position, said hoop thereby preventing said snap-fastening means of the fixing ring from splaying apart.

ABSTRACT

An attaching ring or fixing ring is provided for attaching or fixing a dispenser member to a neck of a receptacle containing a substance to be dispensed. The ring is annular and has a bottom portion and a top portion. In a preferred embodiment, the bottom portion includes snap-fastening tabs for fixing the ring to the neck. The top portion includes an opening for the dispenser and a surrounding structure for securing the dispenser member to the neck. The top portion further includes at least one guide wall element extending parallel to the longitudinal axis of the dispenser member and around the periphery of the fixing ring substantially in line with the snap-fastening tabs. A hoop can be provided for preventing the tabs from splaying apart. The hoop can include an internal projection, such as a vertical rib or a thread.

FIG. 1

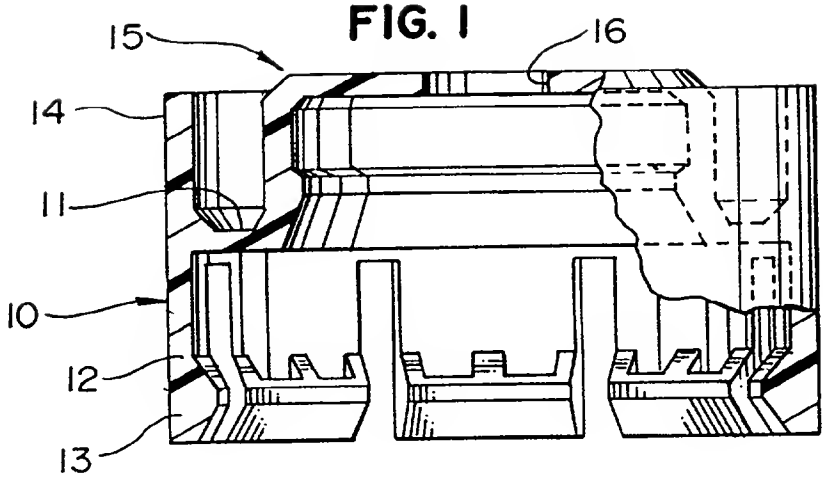


FIG. 2

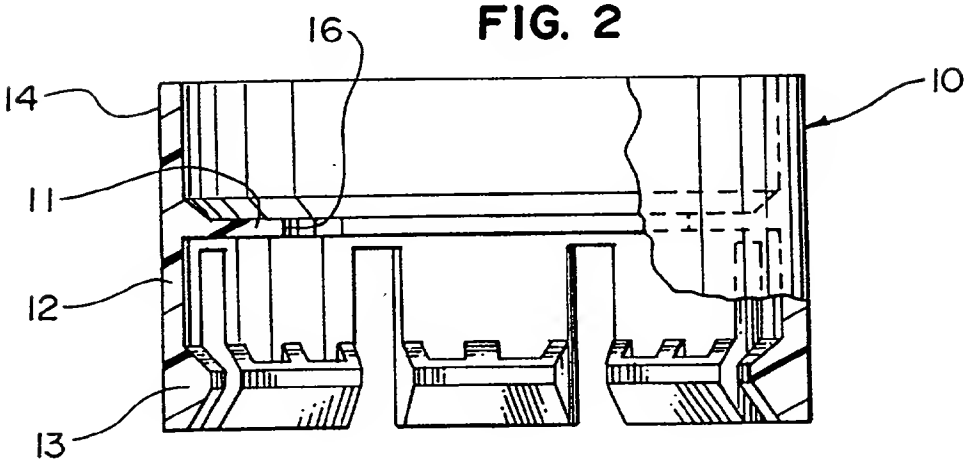


FIG. 3

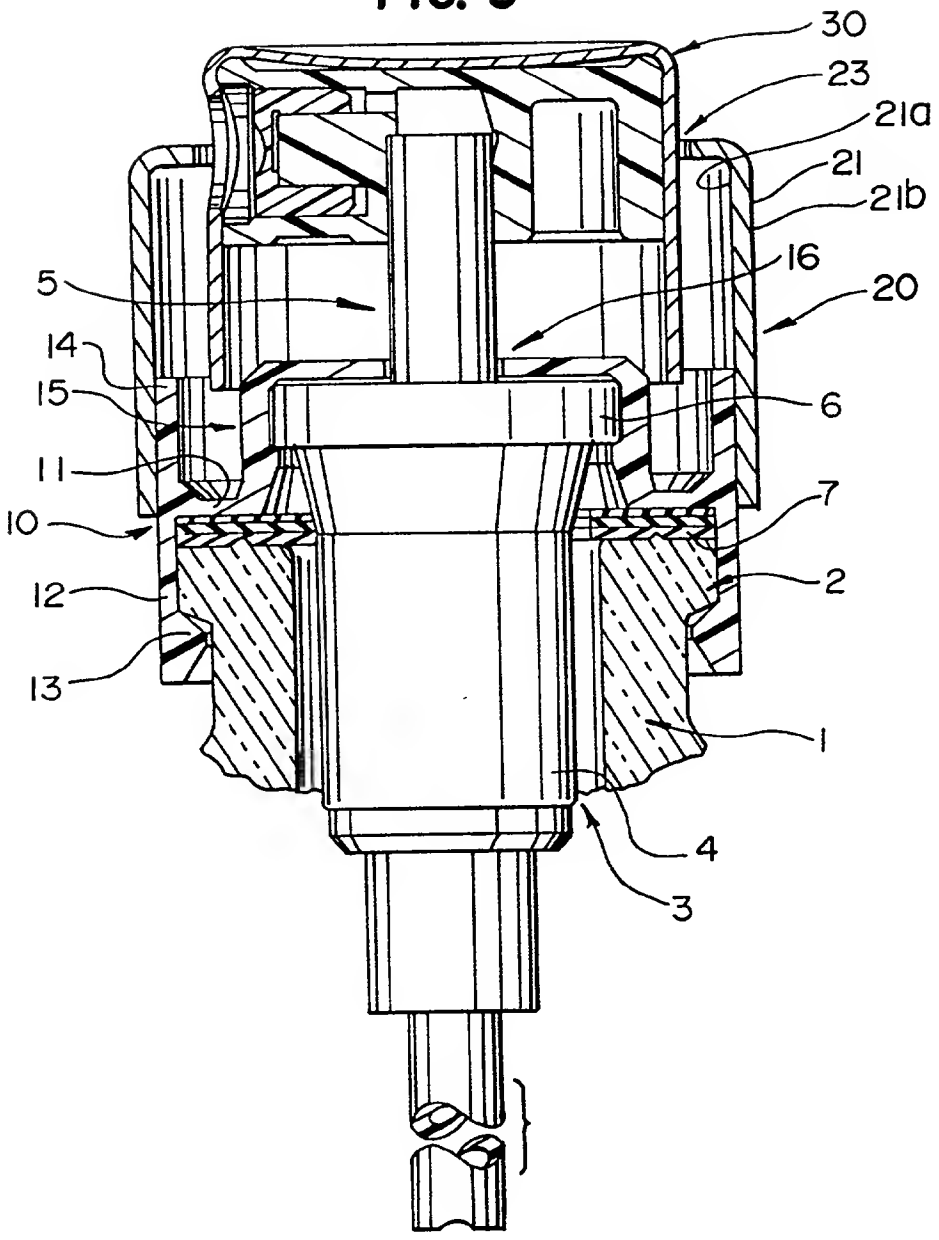


FIG. 4a

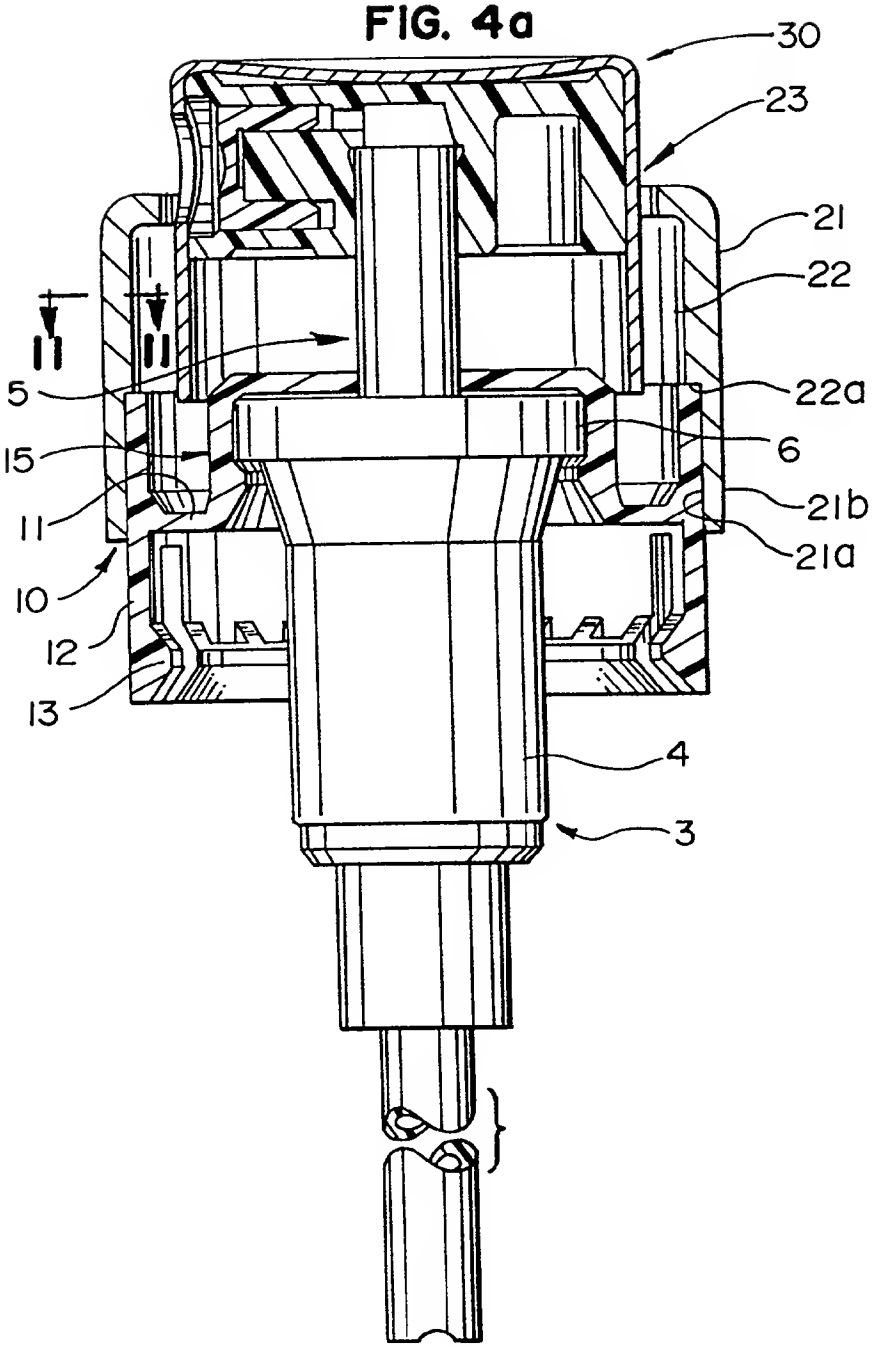


FIG. 4b

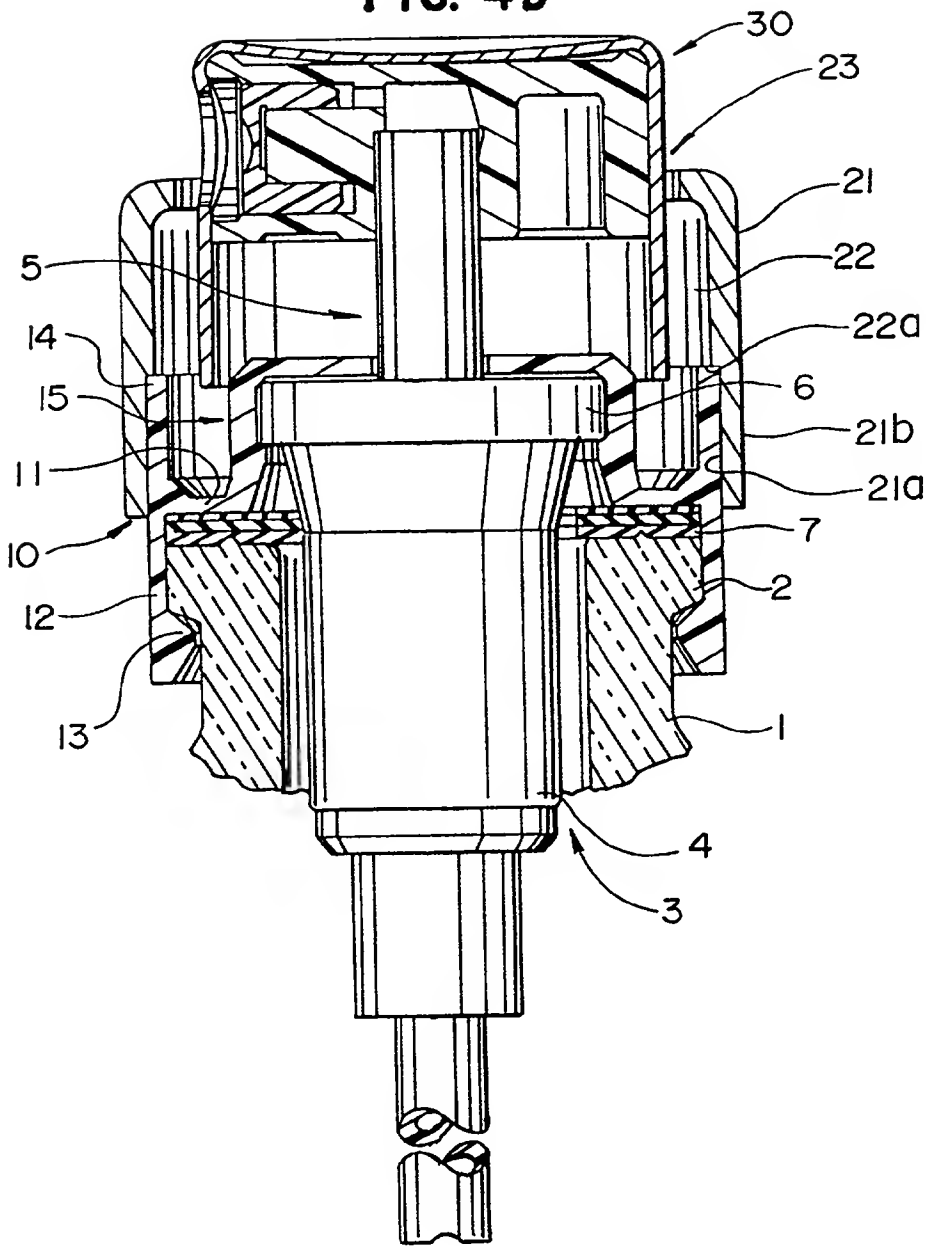


FIG. 4c

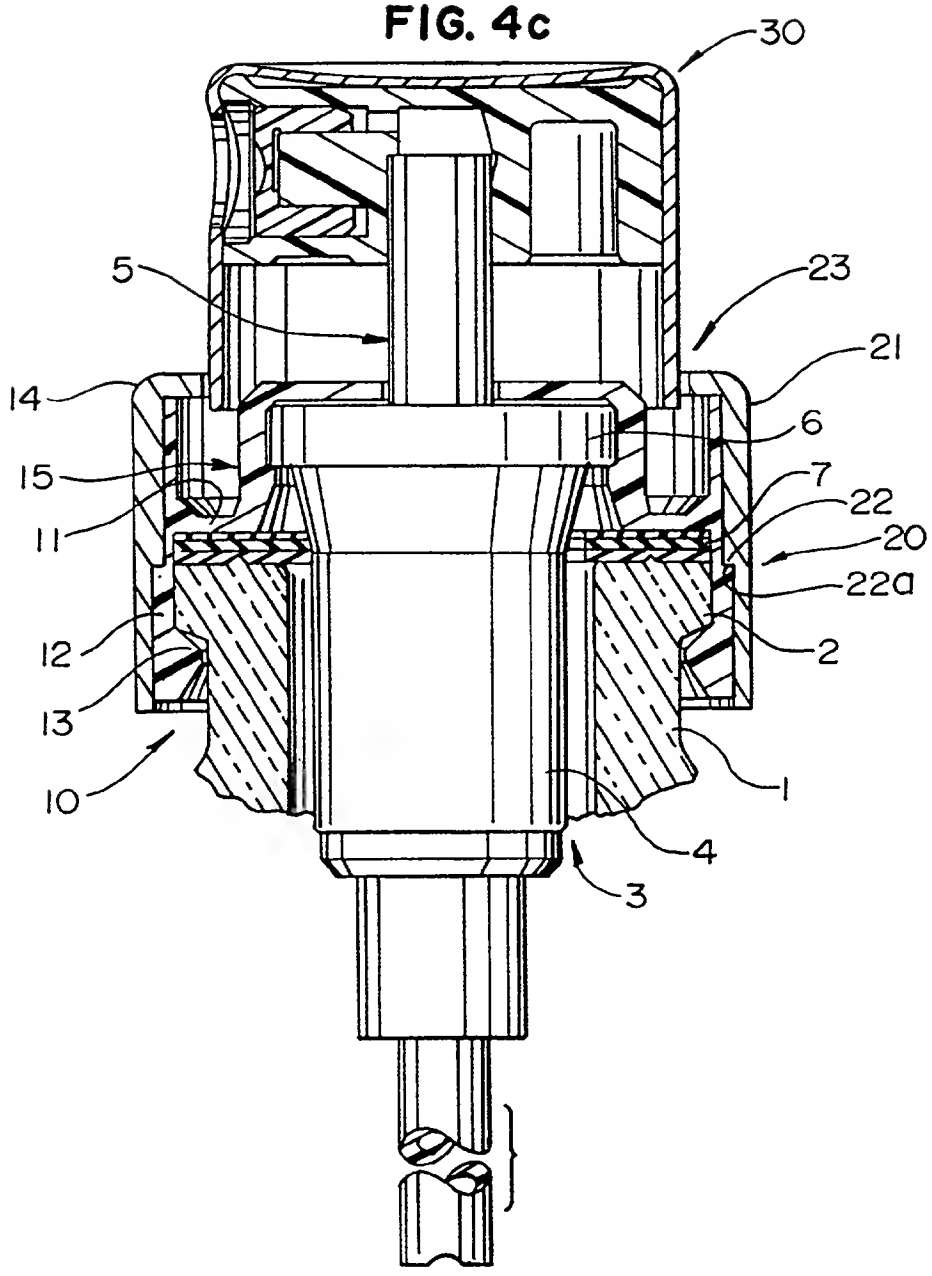


FIG. 5

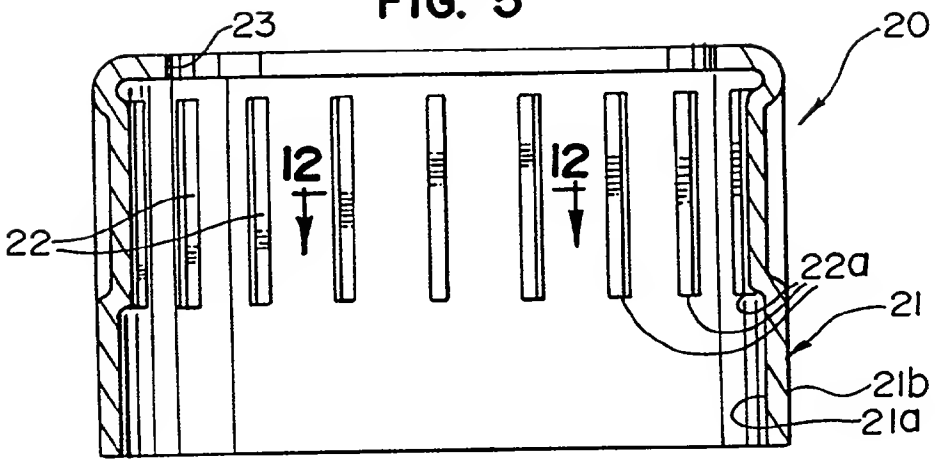


FIG. 6

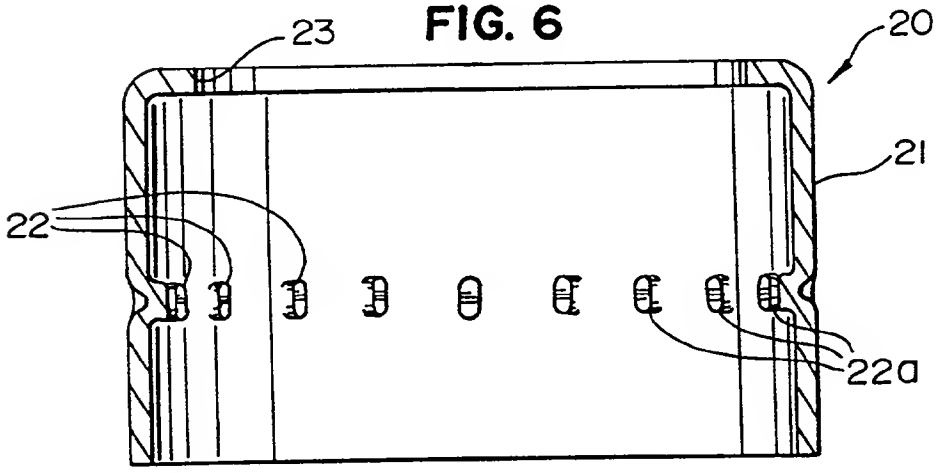


FIG. 7

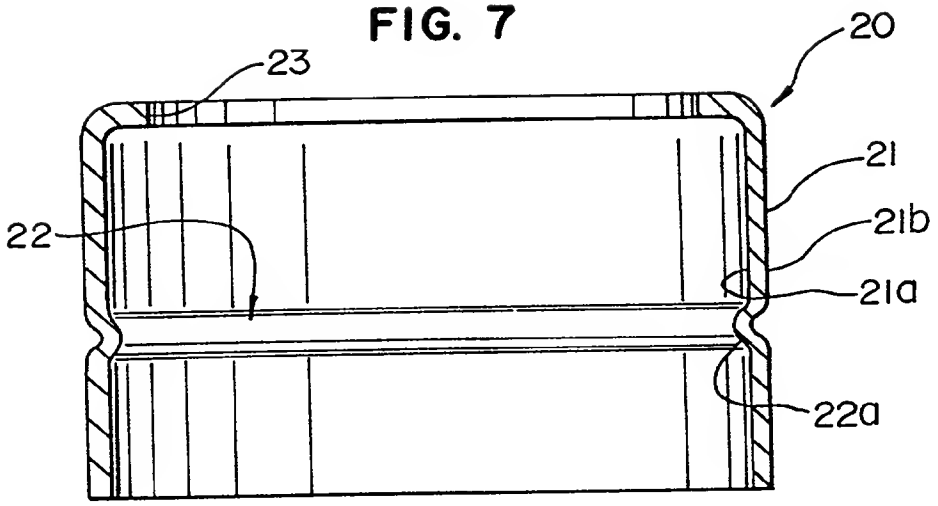


FIG. 8a

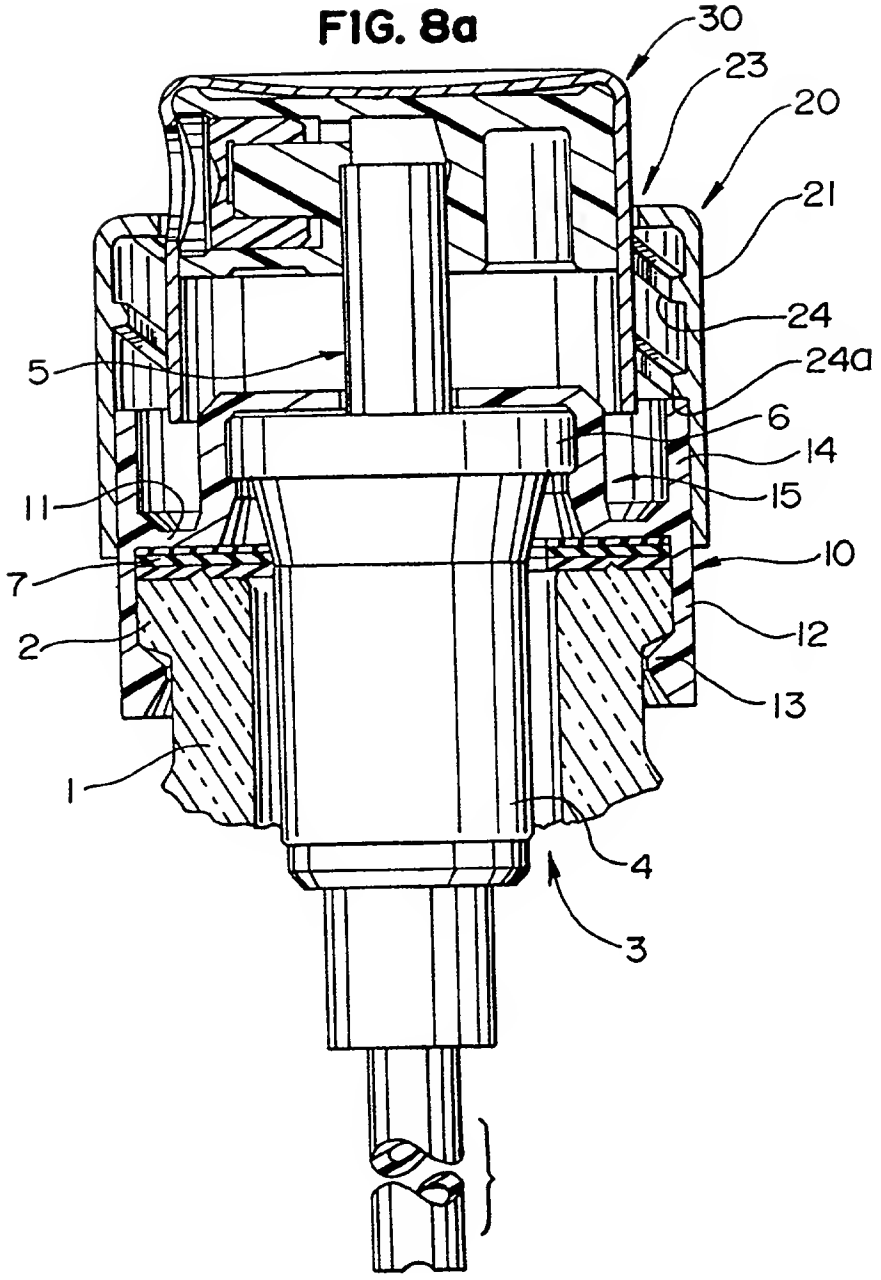


FIG. 8b

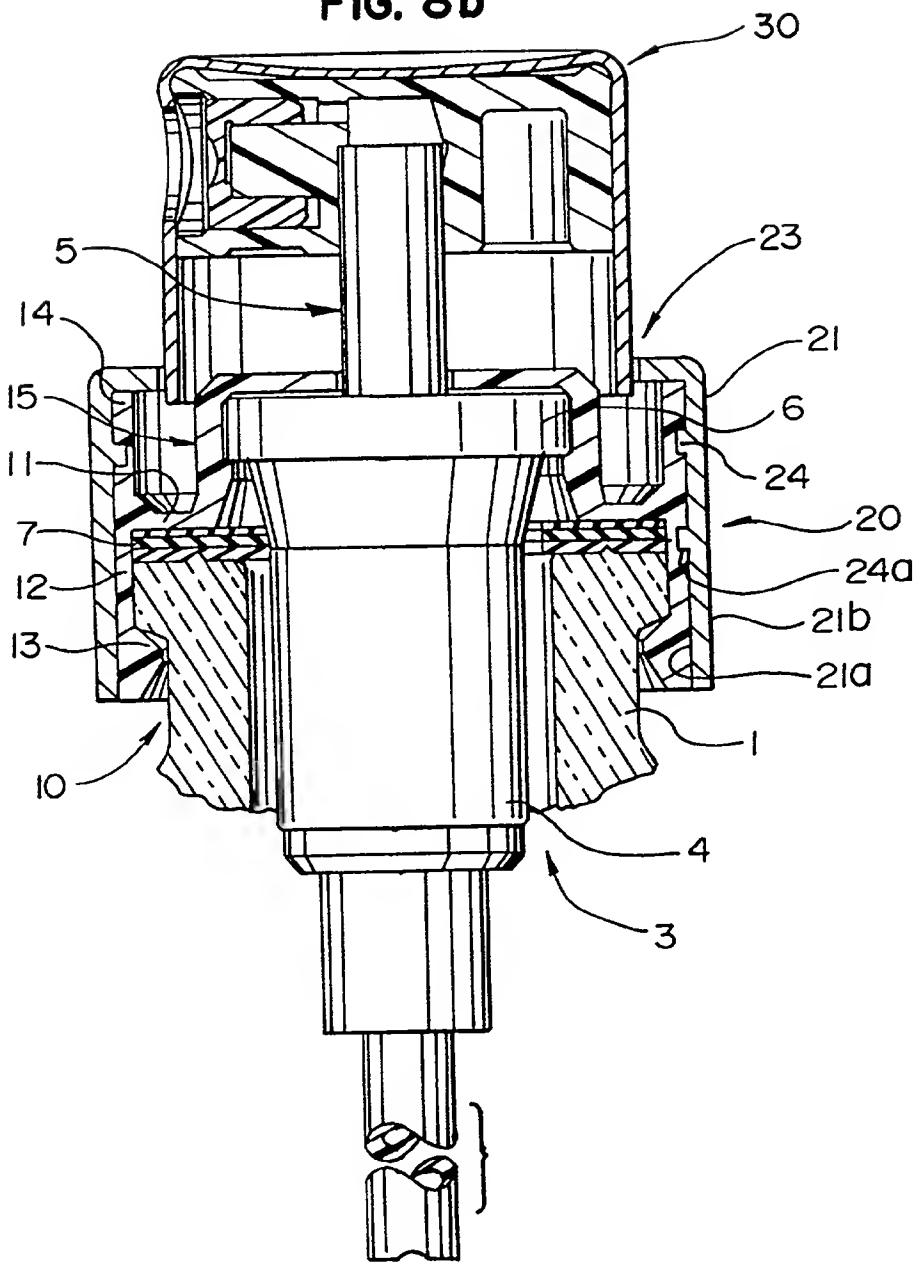


FIG. 9

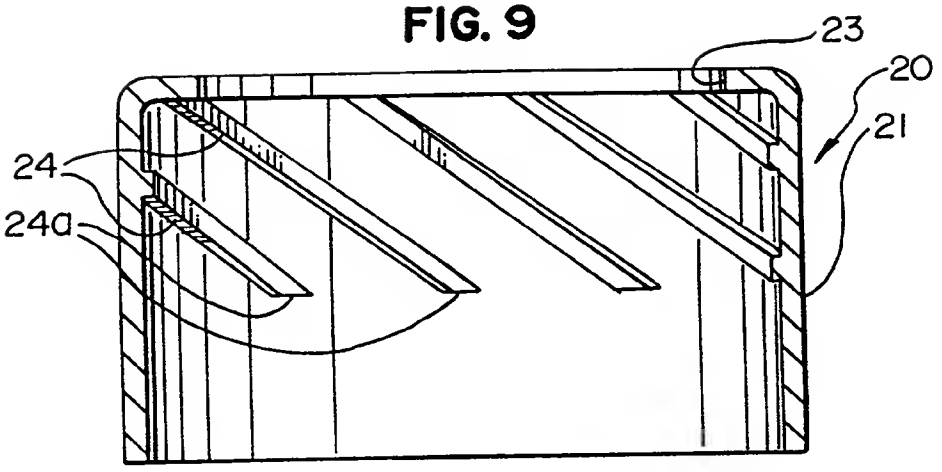


FIG. 10

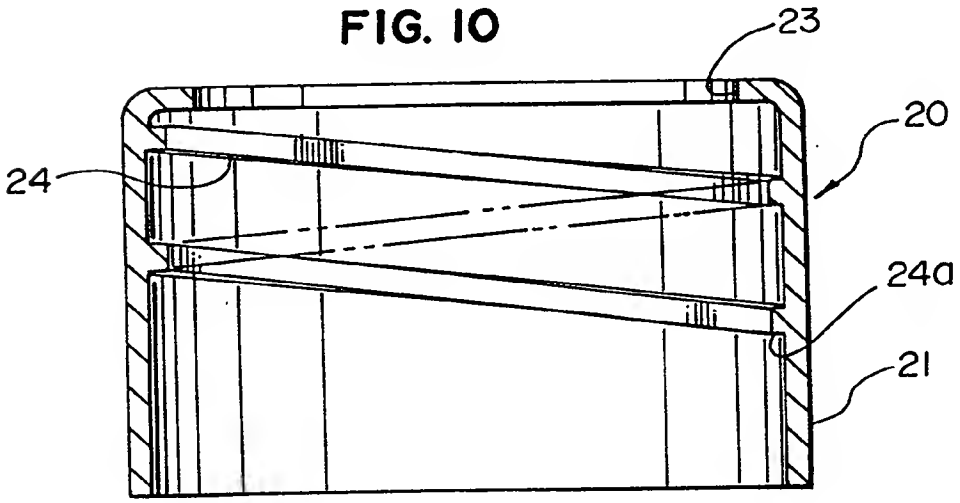


FIG. 11

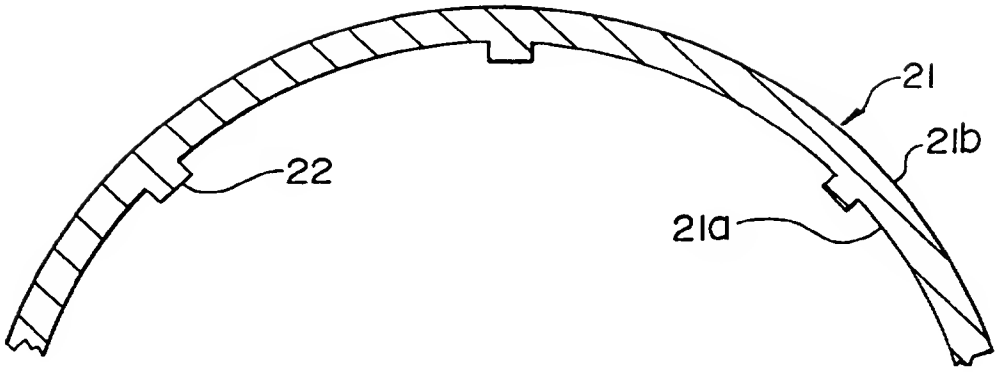
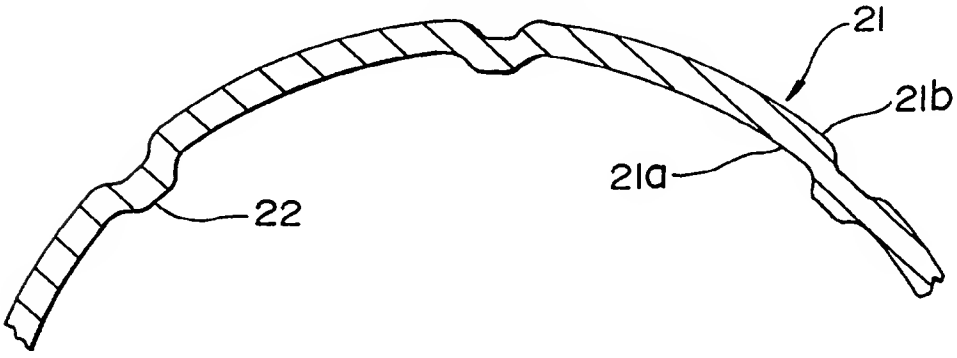


FIG. 12



PATENT APPLICAT N DECLARATION AND _WER OF ATTORNEY

I HEREBY DECLARE THAT:

My residence, post office address, and citizenship are as stated below.

I believe I am the original, first, and sole inventor (if only one name is listed) or an original, first, and joint inventor (if plural names are listed) of the subject matter which is claimed and for which a patent is sought on the invention entitled: A DEVICE AND A METHOD FOR ATTACHING A DISPENSER MEMBER TO A RECEPTACLE the specification of which:

____ is attached hereto;

__X__ was filed on Sept. 22, 1994 as Application Serial No. 08/311,041 and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to herein.

I acknowledge the duty to disclose all information to the Patent and Trademark Office known to me to be material to the patentability of this application, as defined in Title 37, Code of Federal Regulations, Sec. 1.56.

I hereby declare that all statements made herein of my knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following as my attorneys or agents with full power of substitution to prosecute this application and transact all business in the United States Patent and Trademark Office connected therewith:

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Albert J. Brunett	Reg. No. 31,742	Martin L. Katz	Reg. No. 25,011	Jack Shore	Reg. No. 17,551
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Post Office Address (If different) _____

Third Inventor's signature: _____ Date: _____